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10/749,180	12/30/2003	Masayuki Tsunekawa	CU-6547	7871

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EXAMINER	
ECHELMEYER, ALIX ELIZABETH	
ART UNIT	**PAPER NUMBER**
1795	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/749,180	TSUNEKAWA ET AL.	
	Examiner	Art Unit	
	Alix Elizabeth Echelmeyer	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 August 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to the amendment filed August 5, 2008. Claims 1 and 2 have been amended. Claim 5 has been cancelled. Claims 1-4 and 6 are pending and are rejected finally for the reasons given below.

Specification

2. The amendments to the specification are proper and are entered.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reimers et al. (US 6,416,904) in view of Kaido et al. (US 6,284,405).

Reimers et al. teach a design and method for making calendered, double side segment coated webs such as for use in non-aqueous rechargeable lithium ion batteries (abstract). Reimers et al. teach a thin metal foil web that is coated with a substance containing an electroactive powder, such as one that is used in lithium ion batteries (column 4 lines 45-57).

Reimers et al. teach that the coating is applied in segments, and that the segments on opposite sides of the web are staggered. Reimers et al. further teach that when the staggering is at 2 mm, this is most effective for preventing damage during production, when the web is calendered to press the coated segments (column 5 lines 3-5).

Reimers et al. teach an intermediate portion of the active material having a constant thickness (see Figures 3b-e).

Reimers et al. fail to teach that a starting side of the coated section has a larger protuberance than a finishing side.

Kaido et al. teach a nonaqueous electrolyte battery containing an electrode plate like the plate of Reimers et al., except the coating sections of Kaido et al. contain segments having a first end and a second end, wherein the second end is shorter than the first (Figure 10B, column 5 lines 10-12).

The coating sections of Kaido et al., having one side shorter than the other, which is the same as having a larger protuberance on the starting side than the finishing side (see arrows of Fig. 10B), are desirable since the distribution of the active material is more uniform when the battery is wound (column 7 line 54 - column 8 line 11). Kaido et al. further teach that the distribution of the active material along the coating region can be adjusted so that the charging and discharging characteristics of the battery are maintained. The shape of the coating material is therefore result effective. It would have been obvious to one having ordinary skill in the art at the time the invention was

made to maintain the intermediate portion of the coating of Reimers et al. with a constant thickness while trailing the coating material at the end, since it has been held that discovering the optimum value of a result effective variable involves only routine skill in the art. MPEP 2144.05 (IIB).

With regard to the new limitations of claim 1, as were found in now cancelled claim 5, Reimers et al. teach that the amount of staggering between the start of the first and the start of the second coat of active material is result effective (column 7 lines 57-61). It would have been obvious to one having ordinary skill in the art at the time the invention was made to stagger the two coatings of active material so that the peak of the starting side of the second layer corresponds to an inclined portion of the peak of the first, since it has been held that discovering the optimum value of a result effective variable involves only routine skill in the art. MPEP 2144.05 (IIB).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the shape of the coating sections of Kaido et al. in the coating sections of Reimers et al. since the shape allows for even distribution of active material once the battery is wound.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reimers et al. in view of Kaido et al. as applied to claim 1 above, and further in view of Fukumura et al. (US 6,027,835).

The teachings of Reimers et al. and Kaido et al. as discussed above are incorporated herein.

Reimers et al. in view of Kaido et al. teach that the electrode may be spirally wound to create a jellyroll battery (column 8 lines 6-7). The battery may be housed in a cylindrical or prismatic case, and a separator is wound between the anode and cathode (column 2 lines 1-8).

Fukumura et al. teach a battery containing an electrode sheet having shifted electrode segments coated on it (abstract). The sheets are wound with a separator and placed in a battery can. An electrolyte is then poured into the can, and it is sealed (Figure 2; column 5 lines 27-40).

It would be desirable to seal the battery case containing the wound assembly and electrolyte, since sealing would prevent contamination or leakage of the electrolyte and enable the battery to be used in implantable or underwater applications.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to seal the battery case containing the wound assembly and electrolyte, since sealing would prevent contamination or leakage of the electrolyte and enable the battery to be used in implantable or underwater applications.

Reimers et al. further teach that various lithium salt and nonaqueous electrolyte solvent combinations may be used in the electrolyte.

Reimers et al. do not explicitly teach that the nonaqueous solvent is organic.

Fukumura et al. teach several examples of organic solvents for electrolytes in lithium batteries (column 7 lines 7-29).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use an organic solvent in the electrolyte because the organic solvent would be chemically compatible with the lithium ion battery components of Reimers et al. in view of Kaido et al. which requires a nonaqueous solvent.

6. Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reimers et al. in view of Kaido et al. and Meyering et al. (US 2001/0017280).

The teachings of Reimers et al. and Kaido et al. as discussed above are incorporated herein.

Reimers et al. in view of Kaido et al. teach a coated web for use as an electrode in a battery.

The method for producing this electrode as taught by Reimers et al. includes double side segment coating (column 6 lines 35-67). The segmented coating is applied to a first side of the web. The web is then turned over and run through the same coating machine to produce coated segments on the opposite side. The web is calendered, or pressed.

Reimers et al. disclose a method for forming electroactive segments wherein the leading edges and trailing edges of the coating segments are on a first side of the current collector are proximate the leading edges and trailing edges, respectively, on the second side of the current collector (column 3 lines 45-55).

Additionally, Kaido et al. teaches drying the coated segments in hot air (column 27 lines 46-47). Applicants acknowledge in the instant specification that hot air drying is known in the art (see [0075] of US Pre-Grant Publication 2005/0031961).

Reimers et al. in view of Kaido et al. fail to teach that the coated sections are made on either side in the same conveying direction and consecutively.

Meyering et al. teach a method of coating a membrane (abstract). Meyering et al., Reimers et al. and Kaido et al. are analogous art because all are concerned with coating (an electrode or a dopant) onto a web (a conductive substrate or a membrane). One of ordinary skill in the art would look to Meyering et al. for the method of performing a similar coating using different materials, as in Reimers et al. or Kaido et al.

Meyering et al. further teach coating both sides of the substrate consecutively (Figure 2, abstract).

It would be desirable to coat both side of the substrate of Reimers et al. in view of Kaido et al. consecutively, such as taught by Meyering et al., since such a method would reduce manufacturing time by combining two steps into one. The method of Meyering et al. could be performed to suit the limitations of Reimers et al. in view of

Kaido et al, specifically that there be distinct coated areas, since the coating injecting apparatus of Reimers et al. and Kaido et al. (14 of Figure 1 of Reimers et al. or 12 of Figure 1 of Kaido et al.) is analogous to 60, 62, 64 in Figure 2 of Meyering et al.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to coat both side of the substrate of Reimers et al. in view of Kaido et al. consecutively, such as taught by Meyering et al., since such a method would reduce manufacturing time by combining two steps into one.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reimers et al. in view of Kaido et al. and Meyering et al. as applied to claim 2 above, and further in view of Fukumura et al.

The teachings of Reimers et al., Kaido et al. and Meyering et al. as discussed above are incorporated herein.

Reimers et al. in view of Kaido et al. and Meyering et al. teach that the electrode may be spirally wound to create a jellyroll battery (column 8 lines 6-7). The battery may be housed in a cylindrical or prismatic case, and a separator is wound between the anode and cathode (column 2 lines 1-8).

Reimers et al. in view of Kaido et al. and Meyering et al. fail to teach that the electrolyte is poured into the battery case that is then sealed.

Fukumura et al. teach a battery containing an electrode sheet having shifted electrode segments coated on it (abstract). The sheets are wound with a separator and

placed in a battery can. An electrolyte is then poured into the can, and it is sealed (Figure 2; column 5 lines 27-40).

It would be desirable to seal the battery case containing the wound assembly and electrolyte, since sealing would prevent contamination or leakage of the electrolyte and enable the battery to be used in implantable or underwater applications.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to seal the battery case containing the wound assembly and electrolyte, since sealing would prevent contamination or leakage of the electrolyte and enable the battery to be used in implantable or underwater applications.

Reimers et al. further teach that various lithium salt and nonaqueous electrolyte solvent combinations may be used in the electrolyte.

Reimers et al. in view of Kaido et al. Meyering et al. do not explicitly teach that the nonaqueous solvent is organic.

Fukumura et al. teach several examples of organic solvents for electrolytes in lithium batteries (column 7 lines 7-29).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use an organic solvent in the electrolyte because the organic solvent would be chemically compatible with the lithium ion battery components of Reimers et al. in view of Kaido et al. and Meyering et al. which requires a nonaqueous solvent.

Response to Arguments

8. Applicant's arguments with have been considered but are moot in view of the new ground(s) of rejection, see above. The new grounds of rejection were necessitated by the addition of new limitations not previously examined, specifically the limitation to the intermediate thickness of the coating segments and the limitation to the drying of the coated segments.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is (571)272-1101. The examiner can normally be reached on Mon-Fri 8-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy N. Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PATRICK RYAN/
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